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NOVEMBER 3.

Mr. THOMAS MEEHAN, Vice-President, in the chair.

Forty persons present.

A paper entitled "On a new genus of Vespertilionidæ," by Harrison Allen, M. D., was presented for publication.

The Influence exerted by the Tongue on the Positions of the Teeth.—DR. HARRISON ALLEN invited attention to the influence exerted by the tongue in determining shapes and relations of the teeth. In hypertrophy of the tongue in the human subject it has been found that the lower teeth are thrown forward and are widely separated from each other. It is reasonable to infer that in lower animals where the tongue is used for prehension that a similar inclination in the tongue to change the teeth to a horizontal, from a vertical position, takes place. In some of the more remarkable examples of the use of the tongue, as for example in the Edentata, the teeth are widely separated from each other, and in most forms are entirely absent from the front of the jaws. Dr. Allen remarked that in the Cheiroptera a similar tendency as above expressed appears to operate. In slender-jawed, long-tongued types, as exemplified in the genera *Macroglossa* and *Glossophaga,* the teeth are imperfectly developed in the front of the upper jaw and nearly concealed by mucous membrane, while laterally compressed and widely separated from each other on the sides. In the genus *Rhynchonycteris* the front upper teeth are reduced to minute filiform movable organs which would appear to have no value in the seizing or the preparing of food, but in all probability are simply performing the offices of organs of touch and as such are used at times when the tongue is protruded to determine possibly its course and direction.

NOVEMBER 10.

Mr. GAVIN W. HART in the chair.

Thirty-six persons present.

On Bows and Arrows and other Implements found among the Arctic Highlanders.—DRS. BENJAMIN SHARP and WILLIAM E. HUGHES exhibited some bows and arrows which they had collected while on the West Greenland Expedition of 1891. As far as they had examined the literature these articles had not been before found in the possession of the Arctic Highlanders. The Nares Expedition obtained an imperfect arrow from one of the deserted settlements. The quiver exhibited contained the bow and arrows. It was made of seal-skin, from which the hair had been removed. The two main pouches, the shorter containing the arrows and the longer containing the bow, were united by a flat piece of skin to which was attached a small pocket to hold seal-carriers, etc. A sling to carry the whole was made of raw hide, to which was attached a small handle of wood. The pouch containing the bow was open and allowed the end to protrude. It measured twenty-seven inches in length. That for the arrows had a movable cap to keep the arrows from slipping out and measured with the latter twenty-one inches. The small pocket was about six inches square.

The bow consisted of seven pieces. Three pieces formed the length and were made of the antler of the reindeer. On each side of joints made by placing the long pieces together, were lashed two pieces of bone. On the outside (the outer curvature of the bow when strung) was a long thin piece and inside a short thick piece. The lashings were of sinew placed over the joint. The ends of the long piece outside, which extended much over the short piece inside, were secured by a few turns of sinew around the antler portion. On the outside were secured about twelve pieces of plaited sinew, which served to strengthen the bow when bent. When the bow was strung, the outer surface presented three curves, one concave on each side of the middle convex one. The bow was unstrung by pulling the cord, which consisted of raw-hide, around toward the outer curvature, so that when the operation was complete the string bent the bow in a direction opposite to that when strung. The length of the bow measured on the string was thirty-one inches; the two end pieces of antler, eleven and a half inches; middle piece of antler, eight inches; outer piece of bone over the joint, six inches; inner piece, two and a half inches,

The arrows were of four kinds, but all had wooden shafts. The commonest kind (*a*) had the head of one piece of iron or steel, probably a knife blade, the handle having been pounded down thin and driven into the wood of the shaft, with an outside seizing of sinew, made from the muscular coat of the stomach of the walrus. The head in this form of arrow was oval. On one such arrow, secured by Dr. R. N. Keely, was stamped "Dr. Hayes, 1860," and was without doubt made from a knife-blade. Another kind of arrow (*b*), was but a modification of the first, the head had been broken from the "neck" and then riveted or lashed fast to it. A third kind of arrow (*c*), was similar to the first, except that the head was of ivory instead of iron, and lashed to the shaft by two bevelled edges. The fourth kind of arrow (*d*), represented a type quite different from any of the others. It consisted of three parts:—the wooden shaft, a bone neck, in which was inserted and riveted a triangular piece of iron or steel. Measurements of the arrows:—the (*a*) pattern measured seventeen to eighteen inches in length; wooden shafts, twelve to fifteen inches; breadth of head, three quarters of an inch; (*b*) pattern (one arrow), length twenty-three inches; shaft, seventeen inches; length of leaf of head, two inches; breadth of same, three quarters of an inch; (*c*) pattern, length, seventeen and one quarter inches; shaft, thirteen and three quarter inches; ivory head, four and three quarter inches; breadth of head, one half of an inch; lap of bevel, three quarters of an inch; (*d*) pattern, length, twenty-eight inches; shaft, fifteen inches; bone neck, six inches; length of iron head, one and a half inches; breadth at base, seven-eighths of an inch; one and a half inches lost in lap of bevel and set of the head.

Some of the arrows were feathered, but not all; never more than two feathers, about five inches in length being lashed to the shaft. These lay flat to the shaft, which at this end in all the arrows was flattened. When the arrow was about to be discharged the plane of the feathers would be parallel to that of the string. At the notch of all of the iron-headed arrows and some of the ivory tipped ones, there was a seizing of sinew to keep them from splitting. The release was what is known as Mediterranean release, three fingers being placed on the string, and the arrow held between the first and second. In all probability the bow and arrow are used only in hunting the reindeer, many antlers and skins of which were observed in the possession of the natives.

A child's bow was also exhibited, measuring on the string ten and three quarter inches. This had only a single curve and was strung by a piece of sinew.

Two bow drills, such as are used by the natives to drill bone and ivory were also exhibited. The bow of one of these (*a*) was made of a curved piece of ivory, the other (*b*) of the rib of the reindeer. One drill (*a'*) was made of a thick piece of wood, in one end of which was inserted an awl; the other end was pointed. When the native showed how this was used he held the end opposite the awl in his mouth, moving the bow with his right hand and holding the bone to be drilled in his left. The other drill (*b'*) was pointed as the first, but the awl was inserted in a piece of bone and this lashed to the wooden handle. There was in addition in one of the drill outfits (*b*), a piece of ivory (*b''*) which fitted conveniently in the hand, or could be held in the mouth. On one side a cavity made to receive the drill, so that greater pressure could be exerted thereon. Length of ivory bow (*a*) measured on the chord of the arc was twelve and a quarter inches; the drill (*a'*), nine and three quarter inches; wooden part, eight and three quarter inches. Length of bone bow (*b*), fifteen and a half inches; bone part three inches, from which the awl projected one inch. The ivory hand piece for drill was three and one quarter inches long by one and a quarter inches broad. The depth of the cavity was one half inch.

DR. SHARP also described a kayak procured at Cape York. He called attention to the difference of the model of this one and that of one procured at Godhaven. The kayaks of Danish Greenland, as is well known, are pointed at both ends and have a marked sheer, the bow and stern both peaking considerably; they are also rounded on the bottom and deck. The Cape York boat is constructed as are other kayaks, of a frame of wood over which is stretched a covering of seal-skins sewed together, the hair first having been removed. The workmanship on the Cape York boat was much more clumsy and heavier than on those of Danish Greenland. The bow, which was the highest part, was pointed, and rose but little from the general line of the boat, and from here it sloped gradually to the stern, which was rounded and its end did not rise above the level of the deck, in fact the boat had no sheer. The boat was much broader in proportion than the Danish ones and distinctly flat-bottomed, the deck also was very nearly flat. The hatch, or "man hole," was polyhedral instead of being circular, and as far as the party could determine no apron, such as used by all the Danish Greenlanders, was employed. In fact the model was similar to the kayaks in use by the Esquimos of British America.

The entire length of the boat was eighteen feet and one inch, and fourteen feet on the keel; from the bow to the forward part of the hatch was nine feet and eight inches; length of hatch, two feet; from after part of the hatch to the end of the stern, six feet and five inches. The sides, amidships, were nearly parallel, and measured in breadth about one foot and nine inches. The perpendicular depth at end of keel forward, which was two feet aft of the point of the bow was twelve and a half inches; half way between the bow and hatch, eleven inches; at half way between hatch and stern, nine inches, and at the after end of the keel two feet forward of the end of the stern, five and a half inches.

The Danish kayak is broadest forward of the hatch, and from here it tapers both to the bow and stern. The kayak has not, heretofore, been mentioned by explorers as being in use among the Arctic Highlanders. This term is restricted to those natives living on the shores of Greenland at and north of Cape York to Etah, near the southern edge of the Humboldt glacier. They, however, have the word kayak in their vocabulary, and their possession of boats probably depends on their supply of wood. Dr. Kane's guide, Hans Friederick, remained with the Arctic Highlanders and married one of their people. The winter following was severe and he and his wife were so pressed for food that they were compelled to eat the kayak which he had brought from Danish Greenland. The two kayaks observed at Ittiblu or Netlik in Barden's Bay, approached the model of the Danish Greenland boat, and it is probable that they are made after the model of the boat which was in the possession of Hans Friederick.

Dr. Hughes spoke of an ivory model of a kayak which he had seen in the museum at St. John's, Newfoundland, on the return of the West Greenland Expedition. It had been brought from Lancaster Sound by Captain Jackman, who presented it to the museum. Its shape was similar to that of the Cape York kayak, as well as of those of British America, having the broad rounded stern and flat bottom and deck.